Managing the Intellectual Assets of Mushroom Genetic Resources

Shung-Chang Jong

Mycology & Botany Program, American Type Culture Collection (ATCC), 10801 University Boulevard, Manassas, VA 20110-2209, USA

Mushroom genetic resources refer to all living mushroom material containing genetic information that is capable of self-reproduction or of being reproduced in a biological system. Mushroom genetic resource centers (MGRCs) or resource units serve not only as sources of biodiversity and genetic material from mushroom-producing fungi for discovery and application (knowledge creation), but also as clearinghouses for information exchange (knowledge sharing).

Changes in mushroom science and technology and the legal and political environments in which mushroom genetic resources are used, as well as increasing competition in the global marketplace, are having a tremendous impact on the major functions of MGRCs. MGRCs have become knowledge-based organizations or units that manage intellectual assets.

The intellectual assets of MGRCs consist of three key elements: intellectual material, intellectual capital, and intellectual property. Intellectual material provides both tacit and codified knowledge of mushroom genetic materials that includes intangible content (genetic information), implemented know-how (product/process innovation), and knowledge databases (computer programs). Intellectual capital includes various kinds of knowledge and innovative ideas that are mainly driven by and derived from individuals or groups in mushroom-based professional organizations, government agencies, and industrial establishments. Intellectual assets with legal protection become intellectual property. Codified knowledge and know-how form a set of interactive intellectual assets concerning mushroom genetic materials that relate directly to product/process innovations and codified portions of the MGRC's underlying infrastructure. The intellectual asset management of MGRCs is a continuous management process and system of creating and extracting value from the mushroom genetic materials by converting the tacit knowledge (genetic information) into codified knowledge (product/process innovation) for future scientific and commercial purposes.

MGRCs function as repositories of valuable genetic materials in the form of bioresources, data, information, and knowledge that are essential for research and development in mushroom science and technology and for the mushroom industry. The repository activities of MGRCs include (1) acquisition, (2) authentication, (3) preservation, (4) production, (5) distribution, and (6) development.

Thus, the major task of intellectual capital management in a MGRC is to codify the knowledge and know-how of human, structural, and customer capital, thereby creating intellectual assets that become the property of the MGRC or mushroom genetic resource units in industry. As knowledge-intensive organizations, MGRCs transform the innovations produced by depositors, users, and resource staff into intellectual assets, from which mushroom scientists and technologists can generate value and share benefits. These intellectual assets are the tools that maximize the value of knowledge, either by bringing facts, data, or information or by delivering expertise and augmentation to mushroom scientists and technologists when and where they are needed.

1521-9437/00/$5.00